

Brehob, Diana (D.D.)

To: jaime.corrigan@uspto.gov
Subject: 09/682959

Examiner Corrigan,

Per our phone conversation, I have attached a shortened version of the Abstract for the above captioned application.

Furthermore, I looked over claim 1 that you'd mentioned contained an error in line 4 which it should properly state: a valve opening electromagnet.

If you include these in an Examiner's Amendment, I will accept these corrections. Allan Lipka is the Patent Attorney who signed the documents for the PTO. Since that time, I have become a registered Patent Agent and will be able to prosecute the case from now on.

Thank you for calling to move this case forward.

Diana Brehob
Patent Agent
P51,496

A system for controlling in-cylinder electromechanical valves of an internal combustion engine has a valve-closing electromagnet for attracting the armature coupled to the valve to close the valve, a valve-opening electromagnet, a valve-opening electromagnet for attracting the armature to open the valve, a valve-opening spring for biasing the valve open, and a valve-closing spring for biasing the valve closed. The method includes de-energizing the valve-closing electromagnet, for a predetermined time enabling the valve to oscillate by the valve springs, and then energizing the valve-closing electromagnet to close the valve. Consequently, only the valve-closing electromagnet is energized to open and close the valve. The valve biasing springs force the valve to a location at which the valve-closing magnet can close the valve. This provides an electrical energy savings over prior methods in which both the valve-opening and valve-closing electromagnets are energized to actuate the valve.

23-Jul-2002

Serial Number 09/682959

Examiner Corrigan,

Per our phone conversation, I have attached both clean copies and redline/strikeout copies of the abstract. The new abstract is within the 150 word requirement.

Diana D. Brehob
Diana Brehob

Patent Agent

P51,496

Abstract - Clean copy

A system for controlling electromechanical of an internal combustion has a valve-closing electromagnet for attracting the armature coupled to the valve to close the valve, a valve-opening electromagnet for attracting the armature to open the valve, a valve-opening spring for biasing the valve open, and a valve-closing spring for biasing the valve closed. The method includes de-energizing the valve-closing electromagnet for a predetermined time, enabling the valve to oscillate by the valve springs, and then energizing the valve-closing electromagnet to close the valve. Consequently, only the valve-closing electromagnet is energized to open and close the valve. The valve biasing springs force the valve to a location at which the valve-closing electromagnet can close the valve. This provides an electrical energy over prior methods in which both the valve-opening and valve-closing electromagnets are energized to actuate the valve.

Abstract - Redline/strikeout

A system and method are disclosed for controlling electromechanical intake valves disposed in the cylinder head of an internal combustion. The electromechanical valve system has a valve-closing electromagnet capable of exhibiting an electromagnetic force for attracting the armature coupled to the valve to close the valve, a valve-opening electromagnet capable of exhibiting an

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~~electromagnetic force for attracting the armature to open the valve, a valve-opening spring for biasing the armature in a direction to open the valve open, and a valve-closing spring for biasing the armature in a direction to close the valve closed. The method includes the steps of de-energizing the valve-closing electromagnet, maintaining the valve closing electromagnet in the de-energized state for a predetermined time, enabling the valve to oscillate by force of the valve opening spring and the valve closing springs, and then energizing the valve-closing electromagnet after the predetermined time to close the valve. Consequently By the method of the present invention, only the valve-closing electromagnet is need be energized in causing the valve to open and close the valve. The method relies on the valve biasing springs force to cause the valve to return to a location atin which the valve-closing electromagnet can closeactuate the valve closed. Prior methods require that both the valve opening electromagnet and the valve closing electromagnet be actuated to open and close the valve. The present invention This provides an electrical energy over savings compared to prior methods in which both the valve-opening and valve-closing electromagnets are energized to actuate the valve.~~